

SEP 29 1955

LISTED JULY 25th, 1955
 6,000,000 shares of \$1.00 par value
 Ticker abbreviation IRY
 Dial ticker number 549
 Post section 1.3

TORONTO STOCK EXCHANGE

LISTING STATEMENT

IRON BAY MINES LIMITED

Incorporated under the Ontario Companies Act (Part XI) by Letters Patent
 dated the 24th day of February, 1954

1. Address of the Company's Head Office and of any other offices:

Head Office: Haileybury, Ontario.
 Executive Office: 25 Adelaide Street West, Toronto, Ontario.

2. Officers of the Company:

OFFICE HELD	NAME	ADDRESS	OCCUPATION
President and Manager	A. C. Mosher	Haileybury, Ontario.	Prospector
Vice-President	W. J. Blair	8 Oaklawn Court, Toronto, Ontario.	Prospector
Secretary-Treasurer	J. F. Daly	107 Wimbleton Road, Toronto, Ontario	Corporate Secretary

3. Directors of the Company:

NAME	ADDRESS	OCCUPATION
A. C. Mosher	Haileybury, Ontario	Prospector
W. J. Blair	8 Oaklawn Court, Toronto, Ontario	Prospector
F. W. Graham	349 Mount Pleasant Road, Toronto, Ontario	Prospector
W. J. Hosking	McWatters, P.Q.	Mine Manager
C. F. Tuer	Haileybury, Ontario	Solicitor

4. Names and addresses of all transfer agents:

Chartered Trust Company, 64 Wellington Street West, Toronto, Ontario.

5. Particulars of any fee charged upon transfer other than customary government taxes:

25 cents per certificate.

6. Names and addresses of all registrars:

Chartered Trust Company, 64 Wellington Street West, Toronto, Ontario.

7. Amount of authorized capital: \$6,000,000.00.

8. Number of shares and par value: 6,000,000 shares of \$1.00 par value.

9. Full details of all shares issued in payment for properties or for any other assets other than cash:

Date	Number of Shares	Description of Properties
March 2, 1954.....	1,200,000	90 unpatented mining claims in the Bruce Lake Area, District of Kenora, recorded as numbers KRL 34226 to 34248 inclusive, KRL 34268 to 34274 inclusive, KRL 34277, KRL 34278, KRL 34279, KRL 34282 to 34285 inclusive, KRL 34291 to 34299 inclusive, KRL 34347 to 34355 inclusive, KRL 34417 to 34445 inclusive, and KRL 34829 to 34834 inclusive.

Total..... 1,200,000

This listing statement is a copy of the listing application made by the applicant company. The Exchange has received no consideration in connection with the issue of this listing statement other than the customary listing fee. The papers and exhibits submitted by the applicant company in support of the listing application are open for inspection at the general office of the Exchange.

10. Full details of all shares sold for cash.	<div> <div>Date</div> <div>No. of Shares</div> <div>Price per Share</div> <div>Amount realized by Company</div> </div>
	<div> <div>Feb. 24, 1954.....</div> <div>5</div> <div>\$1.00</div> <div>\$ 5.00</div> </div>
	<div> <div>March 8, 1954.....</div> <div>500,000</div> <div>.50</div> <div>250,000.00</div> </div>
	<div> <div>May 18, 1955</div> <div>300,000</div> <div>.35</div> <div>105,000.00</div> </div>
	<div> <div>May 18, 1955.....</div> <div>250,000</div> <div>.75</div> <div>187,500.00</div> </div>
	<div> <div>May 18, 1955.....</div> <div>250,000</div> <div>1.00</div> <div>250,000.00</div> </div>
	<div> <div>Total.....</div> <div>1,300,005</div> <div></div> <div>\$792,505.00</div> </div>
11. Total number of shares issued.	2,500,005.
12. Number of shares now in treasury or otherwise unissued.	3,499,995.
13. Particulars of any issued shares held in trust for the Company or donated for treasury purposes.	Nil.
14. Date of last annual meeting.	June 23rd, 1955.
15. Date of last report to shareholders.	May 25th, 1955.
16. Details of any treasury shares (or shares issued subject to payment or shares held for the benefit of the treasury) now under option or the subject of any underwriting or sales agreement. If none, this to be stated.	No shares are under option or are the subject of any underwriting or sales agreement.
17. Details of any shares pooled, deposited in escrow, non-transferable or held under any syndicate agreement or control.	1,080,000 shares, part of the stock issued in payment for properties as set out in item 9 are held in escrow by Chartered Trust Company at Toronto, subject to release pro rata to the parties entitled in such amounts and at such times as shall be authorized by unanimous resolution of the Board of Directors of the Company and the Ontario Securities Commission.
18. Details of any registration with or approval or authority for sale granted by or any filing with a Securities Commission or corresponding Government body.	Filings completed under Sec. 38 of the Ontario Securities Act and receipt dated April 2nd, 1954, received from the Ontario Securities Commission. Annual prospectus filed and receipt dated May 9th, 1955, obtained from Ontario Securities Commission.
19. Has any application for registration with, or approval or authority for sale by or any filing with a Securities Commission or corresponding Government body ever been refused, cancelled or revoked? If so, give particulars.	No.

20. Particulars of any bonds, debentures, notes, mortgages, charges, liens or hypothecations outstanding.	None.
21. Enumerate fully, giving claim or property numbers, approximate acreage, townships and mining camp or oil field: (a) Properties owned where titles vested in Company. (b) Properties leased. (c) Properties otherwise held. Give particulars of title held by the Company in each instance, (e.g. patented, unpatented, Crown granted, held under mining license, perpetual lease, etc.)	90 unpatented mining claims in the Bruce Lake Area, District of Kenora, recorded as numbers KRL 34226 to 34248 inclusive, KRL 34268 to 34274 inclusive, KRL 34277, KRL 34278, KRL 34279, KRL 34282 to 34285 inclusive, KRL 34291 to 34299 inclusive, KRL 34347 to 34355 inclusive, KRL 34417 to 34445 inclusive, and KRL 34829 to 34834 inclusive.
22. Full particulars of any royalties or other charges payable upon production from each individual property.	None.
23. Are any lawsuits pending against the Company or any of its properties, or are there any other circumstances which might affect the Company's position or title adversely? If so, explain fully.	None.
24. Describe plant and equipment on property.	There is no plant and equipment on the property.
25. Describe development accomplished and planned.	Trenching, surface stripping, dip needle traverses and bulk testing were followed by geomagnetic and geological surveys. 13,062 feet of "A" core diamond drilling were completed. Magnetite bearing core representing 6,026 feet of drilling were processed at Ishpeming, Michigan, and indicated that the ore could be economically concentrated. Reserves are calculated at 187,000,000 long tons, which would produce 77,400,000 long tons of concentrates. It is proposed to utilize open pit mining methods to bring the property into production.
26. Date and author of mining engineer's or petroleum geologist's report filed with this application and available for inspection on request.	April 24th, 1955. M. W. Bartley.
27. Full particulars of production to date.	None.

28. Have any dividends been paid? If so, give dates, per share rate, and amount paid in dollars on each distribution.	No.
29. Name and address of the solicitor or attorney whose certificate that the applicant is a valid and subsisting company and that the shares which have been al- lotted and issued were legally created and are fully paid and non-assessable has been filed with the Exchange.	Day, Wilson, Kelly, Martin & Morden, 1116 Federal Building, 85 Richmond Street West, Toronto, Ontario.
30. (a) Have any shares of the Company ever been listed on any other stock exchange? If so, give particulars.	No.
(b) Is any application for listing the shares of the Company on any other stock exchange now pending or contemplated? If so, give particulars.	No.
(c) Has the listing of any shares of the Company ever been refused or deferred on any stock exchange? If so, give particulars.	No.
31. Particulars of the principal busi- ness in which each director has been engaged during the past five years, giving the length of time, position held and name of employing company or firm.	<p>ALEXANDER CLIFFORD MOSHER has been President and Manager of Calmor Mines Limited, Haileybury, Ontario, since May, 1945.</p> <p>WALTER JAMES BLAIR, an independent prospector of long standing, is President of Chimo Gold Mines Limited and officer and director of other mining companies.</p> <p>FORREST WILLIAM ANDREW GRAHAM, an independent prospector, is President of Lake Osu Mines Limited, Vice-President of Chimo Gold Mines Limited and director of other mining companies.</p> <p>WILLIAM JAMES HOSKING has been President and Manager of McWatters Gold Mines Limited, Haileybury, Ontario, for over the past five years.</p> <p>CLARENCE FREDERICK TUER, Q.C., has practised law in Haileybury, Ontario, for over the past five years.</p>

Dated at Toronto the 23rd day of June, 1955.



IRON BAY MINES LIMITED

"F. W. GRAHAM", *Director*.

"C. F. TUER", *Director*.

STATEMENT SHOWING NUMBER OF SHAREHOLDERS as of June 21st, 1955

Number		Shares
85	Holders of 1 - 100 shares.....	7,652
301	" " 101 - 1000 ".....	146,366
12	" " 1001 - 2000 ".....	21,142
5	" " 2001 - 3000 ".....	13,600
1	" " 3001 - 4000 ".....	4,000
3	" " 4001 - 5000 ".....	15,000
22	" " 5001 - up.....	2,292,245
429	Stockholders	Total shares..... 2,500,005

FINANCIAL STATEMENTS

BALANCE SHEET, as of May 31, 1955

ASSETS

Cash in banks.....	\$ 680,904.05
FIXED:	
Unpatented mining claims — acquired for a consideration of \$10,000 cash and 1,200,000 shares of capital stock of the company issued at 40¢ per share.....	490,000.00
Deferred development expenses.....	97,772.65
Incorporation expenses.....	5,428.30
	<u>\$1,274,105.00</u>

LIABILITIES

Accounts payable.....	\$ 1,600.00
CAPITAL:	
Authorized — 6,000,000 shares having a par value of \$1 each	
ISSUED —	
For unpatented mining claims.....	1,200,000 shares \$1,200,000.00 \$ 720,000.00
For cash.....	1,300,005 shares 1,300,005.00 507,500.00
	<u>2,500,005 shares \$2,500,005.00 \$1,227,500.00</u>
	<u>1,272,505.00</u>
	<u>\$1,274,105.00</u>

Note: During the period from December 31, 1954 to May 31, 1955, 800,000 shares were issued for \$542,500 in cash pursuant to options granted prior to December 31, 1954.

Approved on behalf of the Board.

F. W. GRAHAM Director
C. F. TUER Director

STATEMENT OF DEFERRED DEVELOPMENT EXPENSES FOR THE PERIOD FEBRUARY 24, 1954 (DATE OF INCORPORATION) TO MAY 31, 1955

DIAMOND DRILLING AND CORE EXTRACTION:		
Diamond drilling.....	\$56,630.13	
Geologist fees and expenses.....	16,196.51	
Salary.....	4,050.00	
Miscellaneous expenses.....	2,520.06	\$79,396.70
GEOMAGNETIC SURVEY:		
Survey fee.....	\$13,830.40	
Salary.....	450.00	14,280.40
ADMINISTRATIVE AND OTHER EXPENSES:		
Secretary's salary.....	\$ 3,000.00	
Audit expense.....	108.00	
Insurance.....	65.70	
Interest and exchange.....	59.60	
Miner's license.....	150.00	
Registrar and transfer fees.....	516.33	
Share certificates.....	99.00	
Sundry travelling expenses.....	344.71	
Sundry.....	149.35	
Travelling expenses to the property.....	445.65	
	<u>\$ 4,938.34</u>	
Deduct bank interest earned.....	842.79	4,095.55
Balance at May 31, 1955.....		<u>\$97,772.65</u>

The above expenses include \$4,500 salary paid to the president in his capacity as manager of the company.

AUDITORS' REPORT

TO THE DIRECTORS OF

IRON BAY MINES LIMITED (No Personal Liability):

We have examined the balance sheet of Iron Bay Mines Limited (No Personal Liability) as at May 31, 1955 and the statement of deferred development expenses for the period February 24, 1954 (date of incorporation) to May 31, 1955. Our examination included a general review of accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion the accompanying balance sheet and statement of deferred development expenses are properly drawn up so as to exhibit a true and correct view of the state of the affairs of the company as at May 31, 1955 and the results of its operations for the period ended on that date, according to the best of our information and the explanations given to us and as shown by the books of the company.

Toronto, Canada,
June 7, 1955.

CLARKSON, GORDON & CO.
Chartered Accountants.

GEOLOGIST'S REPORT

INTRODUCTION

Preliminary surface trenching and sampling of the Bruce Lake Property of Iron Bay Mines Limited in 1953 proved sufficiently encouraging to warrant an expanded program of geomagnetic and geological surveying in conjunction with diamond drilling. The 1954 exploration confirmed the presence of an extensive magnetite-bearing iron formation and outlined two minable zones having lengths of 3200 feet and 7400 feet respectively. The width of the zones varies from 120 feet to 620 feet. Approximately 187,000,000 long tons of crude ore are indicated to a depth of 500 feet below the mean level of Bruce Lake. Mineral dressing tests have shown that approximately 77,400,000 long tons of concentrates with an average grade of 64% iron can be produced from this tonnage of crude ore.

PURPOSE AND SCOPE OF REPORT

The purpose of this report is to interpret and summarize the results of the recent exploration, to make an interim calculation of the available tonnage of crude ore and concentrates, and attempt an economic appraisal of the deposits. The report can only state the facts derived from the geomagnetic and geological surveys, the diamond drilling, and the results of metallurgical test, and offer postulations concerning the probable production costs and the selling price of the product. The reader must bear in mind that all figures contained herein may be subject to revision following further exploration and depending on conditions at the time of operation.

PROPERTY

Iron Bay Mines Limited acquired a group of ninety unpatented mining claims situated at Bruce Lake, Red Lake Mining Division, Kenora District, Ontario. Sufficient work has been recorded to satisfy the assessment requirements of the above claims until mid-1957. More specifically the claims are:

K.R.L. 34226 to 34248 inclusive	K.R.L. 34291 to 34299 inclusive
K.R.L. 34268 to 34274 inclusive	K.R.L. 34347 to 34355 inclusive
K.R.L. 34277 to 34279 inclusive	K.R.L. 34417 to 34445 inclusive
K.R.L. 34282 to 34285 inclusive	K.R.L. 34829 to 34834 inclusive

The property is accessible by car or truck via a secondary road one and one-half miles long, branching off the Red Lake road. The junction is approximately twenty miles south of the town of Red Lake.

GEOLOGY

During the summer of 1954 the exposed surface rock was carefully examined and all diamond drill core was carefully logged. The composite geological plan is recorded in Figure 1 accompanying this report. The iron formation was successfully traced for approximately 14,000 feet and determined to be a strong, continuous member of a highly metamorphosed series of paragneiss and granite gneiss. Both walls of the iron formation are similar material, probably paragneiss into which granite rocks have been injected along the bedding planes. Remnants of the gneiss are present as isolated occurrences within the iron formation and will be encountered as horses of waste rock when mining certain sections of the crude ore.

HISTORY AND DEVELOPMENT

The first published detailed account of the iron formation at Bruce Lake is contained in the 33rd Annual Report, (1922) part four, of the Ontario Department of Mines. E. L. Bruce stated that the material is too low to be workable without concentration. This opinion is still valid, but improved techniques for the beneficiation of iron-bearing material developed since the publication of the above reports has greatly altered the economic potential of the deposit.

Some diamond drilling was attempted many years ago, but the results are not available. Two vertical drill holes were observed near the shore of the lake, but it is impossible to determine their depth.

During 1953 and subsequent to the staking of the claims, considerable trenching and surface stripping was accomplished. Several dip needle traverses were made across the formation in an attempt to delineate the walls. At least three independent examinations were made for major iron ore producers, and several hundred pounds of samples were taken for analyses and laboratory testing. One set of samples, representative of the iron formation, was tested to determine beneficiation qualities, and the results are herein recorded.

Davis Magnetic Tube Tests

Sample	Grind	% Fe Crude	Magnetic Concentrate		% SiO ₂	Tailings % Fe	% Fe Red.
			% Wt	% Fe			
195	-100	35.20	62.14	54.70	22.75	3.20	96.56
	-325	33.20	50.59	62.50	11.85	3.20	95.24
196	-100	31.50	57.80	51.80	25.81	3.70	95.05
	-325	32.00	47.46	64.10	9.80	3.00	95.06
197	-100	37.20	60.66	55.10	20.85	9.60	89.84
	-325	36.00	50.69	64.70	9.34	6.50	91.11

The above results suggest that the material is amenable to magnetic concentration at a grind of -325 mesh, producing a desirable product at a concentration ratio of approximately 2:1.

Iron Bay Mines Limited were sufficiently encouraged by the preliminary results to undertake a comprehensive program of exploration by geomagnetic and geological surveying and diamond drilling, as described below.

EXPLORATION

Early in 1954 a geomagnetic survey of the entire ninety claims group was completed by Gardiner, Low & Morrow. The survey successfully outlined the boundaries of the iron-bearing formation, and permitted intelligent planning of the subsequent diamond drilling program.

During the summer and autumn of 1954 the claims underlain by iron formation were systematically traversed and a detailed geological map was compiled. Concurrently with the geomagnetic and geological work, diamond drilling along thirteen pre-determined section lines was carried out. The drilling was performed by Boyles Bros. Drilling (Eastern) Limited, and was directed and supervised by the writer. Twenty-nine "A" size diamond drill holes were sunk for an aggregate footage of 13,062 feet. The entire iron-bearing cores from these holes were boxed and shipped to the Research Laboratory of The Cleveland-Cliffs Iron Company, at Ishpeming, Michigan. The cores were logged for mineral dressing purposes, sampled, and composite samples were prepared for analyses and metallurgical testing.

METALLURGICAL RESULTS

The magnetite-bearing cores obtained from twenty-one of the twenty-nine diamond drill holes, and representing 6,026 feet of drilling, were shipped to the Research Laboratory of The Cleveland-Cliffs Iron Company, Ishpeming, Michigan for test. The results, as tabulated in Appendix 1, substantiate the original conception that the iron formation is amenable to economic concentration and will produce a desirable blast furnace product. The material tested represents the iron formation for 10,000 feet of its entire length and shows a remarkable uniformity in both grade and concentratability. Although laboratory results on diamond drill core and small surface samples usually closely represent the results which can be expected in actual mining and milling practice, it will be necessary to obtain a large bulk sample for pilot mill test before the final plant design can be made, and before definite results on a production basis can be calculated.

RESERVES

The diamond drilling already accomplished, supplemented by assumptions which can be made from the geomagnetic and geological information, indicates that approximately 187,000,000 long tons of crude ore may be available to a depth of 500 feet below the level of Bruce Lake. On the basis of the metallurgical results tabulated in Appendix 1, this would produce approximately 77,400,000 long tons of concentrates. The total calculated tonnage of crude ore and concentrates are subdivided as set forth below into categories according to the degree of assurance provided by the exploration.

	Crude Ore	Concentrates
Proved	91,268,100 long tons	37,784,993 long tons
Probable	73,355,700 long tons	30,369,260 long tons
Prospective	22,437,500 long tons	9,289,125 long tons
TOTAL	187,061,300 long tons	77,443,378 long tons

FUTURE EXPLORATION

Sufficient exploration has been accomplished already to determine the proved ore and indicate the probable and prospective ores. At some future time, prior to development and production, additional drilling will be required to define the total proved reserve, to provide data for the plant design and establish a flow sheet. It is estimated that 11,000 lineal feet of diamond drilling will suffice.

OPEN PIT MINING

On the basis of the known facts and reasonable postulations concerning the orebodies, tentative open pit limits have been designated and outlined on Figure II accompanying this report. In order to win the 187,000,000 tons of ore, a total of 17,263,000 cubic yards of earth stripping will be required and 55,600,000 cubic yards of wall rock, including waste-in-ore, will have to be removed. The south and smaller pit is estimated to contain 56,424,800 long tons of crude ore, and involves 3,561,300 cubic yards of earth stripping and 14,800,000 cubic yards of rock stripping. The larger northern pit is estimated to contain 130,636,500 long tons of crude and will require the removal of 13,701,700 cubic yards of earth stripping and 40,800,000 cubic yards of rock stripping. Since the orebodies are situated close to, or beneath the waters of Bruce Lake, it will be necessary to construct a protective dike of earth and rock near the east and south limits of the open pits. It is estimated that some 13,300 lineal feet of dike, containing 732,732 cubic yards of material, will be required. Subsequent to the placing of the dike, the water and fluid mud in the pit areas would have to be removed by pumping.

ORE VALUES AND MINING COSTS

The concentrate which could be produced will have a dry analysis of 64.35% iron and 8.83% silica. The process of pelletizing involves the addition of a certain amount of bentonite as a binder for the formation of the pellets. Present practice suggests 2% by weight as the amount of bentonite required, and therefore the shipping grade of the pellets will be reduced from 64% iron to approximately 62% iron. Beneficiated ore in the form of pellets or other agglomerates is increasingly desirable since the high iron content and uniform structure afford savings to the consumer in transportation, handling and smelting. The exact amount of saving has not been published, but sufficient data are available to assure The Reserve Mining Company, Erie Mining Company and Oliver Iron Mining Division of United States Steel Corporation that their future taconite-beneficiating operations will be economic. It is common knowledge that the taconite operations of the above companies, based on to-day's iron ore prices would not be profitable. In spite of this, they are expending in excess of \$600,000,000.00 for installations in anticipation of a premium for high-grade agglomerates. Their products are comparable to the pellets which can be produced from Bruce Lake crude ore.

Since the exact saving to the consumer has not been definitely established, the precise premium which pellets will command can only be estimated. The generally accepted estimate is \$1.50 per long ton, based on 51.50% iron natural.

On the basis of published 1954 ore prices, the f.o.b. plant value of Bruce Lake pellets, not including premium, would be \$7.265. If the pellet premium is included, the f.o.b. plant value will increase to \$9.072. The estimated cost of producing pellets under present conditions amounts to \$7.395, resulting in an indicated loss, without premium, of \$0.130, and an indicated profit, with premium, of \$1.677. The details substantiating the values and costs are included in Appendix II of this report. Appendix II also shows in detail the capital investment, transportation charges, depreciation rate, and amortization schedule for a proposed operation.

CONCLUSIONS AND RECOMMENDATIONS

The presence of large masses of concentratable iron formation has been established at the Bruce Lake property of Iron Bay Mines Limited, and it is known that the material can be beneficiated to produce a desirable product.

The Bruce Lake property is one of the better reserves of beneficiating iron ore so far established in Canada and is an asset to Iron Bay Mines Limited.

Mining Costs

Actual mining costs at four similar beneficiating projects are: \$0.697, \$0.540, \$0.540 & \$0.500 respectively per long ton crude ore
Assume fair figure to be = \$0.540

Milling Costs

Actual milling costs at four similar beneficiating projects are: \$1.100, \$0.600, \$0.935 & \$1.08 respectively per long ton crude ore
Assume fair figure to be = \$0.935

General Mine Expense

Actual general mine expense at four similar beneficiating projects are: \$0.330, \$0.150, \$0.135 & \$0.290 respectively per long ton crude ore
Assume fair figure to be = \$0.205

Agglomerating Costs

Expected agglomerating costs of three similar beneficiating projects are: \$2.00, \$1.55, \$1.20 respectively per long ton of pellets
Assume fair figure to be = \$1.660

Capital Investment

Latest estimate of cost of mine and mill plant to mine and process beneficiating ores of this type is \$14.42 per ton of annual product capacity
On basis of 1,000,000 long tons annually, investment will be $\$14.42 \times 1,000,000 =$ \$14,420,000
Latest estimate of cost of agglomerating plant to produce pellets is \$6.48 per ton of annual pellet capacity
On basis of 1,000,000 tons annually, investment will be $\$6.48 \times 1,000,000 =$ \$6,480,000
Total capital investment for mine, mill and pellet plant = \$20,900,000

Depreciating Rate

Assume 30 year life for plant and production rate of 1,000,000 long tons per year. Depreciation rate per ton product is $\frac{\$20,900,000}{30 \times 1,000,000} =$ \$0.696

Stripping

Preliminary estimate of earth stripping required to uncover crude ore is 17,418,000 cubic yards
Preliminary estimate of rock stripping and waste-in-ore required to make available crude ore is 55,600,000 cubic yards
Ratio of earth stripping to crude ore is 0.22:1
Ratio of rock stripping and waste to crude ore is 0.72:1
Average cost per cubic yard for removal of earth stripping is \$0.40
Average cost per cubic yard for removal of rock stripping is \$0.96

Diking

Because the crude ore is situated close to or below the waters of Bruce Lake the proposed open pits must be protected by earth and rock dikes.
The proposed specifications for the dikes are:
Width at crest to be 30 feet
Crest of dike to be 5 feet above present lake level
Bottom of dike to be 10 feet below present lake bottom
Slope of dike below lake bottom to be 1:1
Slope of dike above lake bottom to be 1:1.5
Assume depth of water to be 10 feet
Area of dike cross-section = $\frac{1487.5}{27}$ square feet = 55.1 cubic yards
Length of dike required = 13,300 feet
Total volume of dike = $\frac{13,300 \times 1487.5}{27} =$ 732,732 cubic yards

Railroad Construction

It is expected that the Canadian National Railways will construct a railroad access line from their mainline to the mine, but allowance must be made for amortization in the event that the mining company should be responsible for the capital cost.
Assume railroad to be 80 miles long and the average cost per mile will be $\$100,000 = 80 \times \$100,000 =$ \$8,000,000

Power Line

Approximately two miles of 44,000 volt transmission line will be required to convey power from the existing Ear Falls-Red Lake power transmission line. The cost of this line is estimated at \$10,000 per mile and will have to be borne by the mining company $2 \times \$10,000 =$ \$20,000

Additional Exploration

Although the preliminary exploration by diamond drilling has indicated a total of 187,061,300 long tons of crude ore, of which 91,268,100 long tons are proved, additional diamond drilling will be required to convert the 95,793,200 long tons of probable and prospective crude ore to proved crude ore. It is estimated that 11,000 feet of diamond drilling will be required for the conversion. The cores will require metallurgical examination and a large bulk sample will have to be obtained for pilot mill test.

The total cost of this exploration is estimated at:

Diamond drilling	=	\$ 60,000
Metallurgy.....		40,000
Pilot plant test.....		50,000
		<hr/>
Total.....		\$150,000

Amortization Schedule

Amortization of stripping, diking, railroad, power line and additional exploration should be based on the total available tonnage in rounded figures, say 77,400,000 long tons pellets as

Earth stripping = 0.22 (ratio) × \$0.40 (cost per cubic yard)	= \$0.088
Rock stripping = 0.72 (ratio) × \$0.96 (cost per cubic yard)	= \$0.691
Diking = 732,732 × \$0.50 (cost per cu yd) ÷ 77,400,000	= \$0.047
Railroad and power line = \$8,020,000 ÷ 77,400,000	= \$0.104
Exploration = \$150,000 ÷ 77,400,000	= \$0.002

CERTIFICATE

I, M. W. Bartley, 202 Dominion Bank Building, Port Arthur, Ontario, Geologist, do hereby certify:

- 1. That my address and occupation are as set out above.
- 2. That I graduated from the University of Manitoba, Winnipeg, Manitoba, with the degree of B.Sc. 1934, and the University of Toronto, Toronto, Ontario, with the degree of Ph.D. in 1940, and that I am a member of the Association of Professional Engineers of the Province of Ontario.
- 3. That I have no interest whatever in the mining properties acquired by the Company or in the securities of the Company, and no expectation of receiving any, except by possible future purchase of treasury shares.
- 4. That my accompanying report on the property of the Company is based on personal examination of the property on several occasions, and personal supervision of the work outlined in the report. These examinations and supervision extend over a period from September 28, 1953 until the present.

DATED at Port Arthur, Ontario, this 24th day of April, 1955.

M. W. BARTLEY, P.Eng.
Consultant

